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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KAO, CHIH CHENG G

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/668,938

Applicant(s)

RASCHE ET AL.

Examiner

Chih-Cheng Glen Kao

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-- Th MAILING DATE of this communication appears on th cov r sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-17 is/are rejected.
- 7) ☒ Claim(s) 12 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION*****Claim Objections***

1. Claim 12 is objected to because of the following informalities. The limitation "the motion signal" in line 13 is recited. There is insufficient antecedent basis for this limitation in the claim. Secondly, the phrase "and means for measuring a motion signal (H, B) which is related to the periodic motion of the body organ and is acquired simultaneously with the acquisition of the projection data set ( $D_0, D_1, \dots, D_{16}$ )," is missing between lines 5 and 6. The marked up version of amended claims does not indicate the deletion of this limitation. These objections may be obviated by re-inserting the above phrase into claim 12. For purposes of examination, the claim has been treated as such. Appropriate correction is required.

2. Claim 14 is objected to because of the following informalities. The limitation "the cardiac motion signal" in line 2 is recited. There is insufficient antecedent basis for this limitation in the claim. This objection may be obviated by changing the dependency of claim 14 from claim 12 to claim 13. For purposes of examination, the claim has been treated as such. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5, 7, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshitome (US Patent 5,751,782) in view of Fujita (US Patent 5482042) and Takagi et al. (US Patent 6470066).

Yoshitome discloses a method and device comprising: an x-ray source (Fig. 1, #11) and an x-ray detector (Fig. 1, #13), detecting a motion signal of a body organ (Fig. 2, (a)) simultaneously with the acquisition of projection data sets (col. 7, lines 17-19) from different x-ray positions situated in one plane (Fig. 2, (c), and col. 2, lines 17-34) in a plurality of cycles (Fig. 4, "First rotation" and "Second rotation) during a same low-motion phase (Figs 2, (a) and (b), and col. 7, lines 17-19, noting diastolic phase refers to the low-motion phase) of a cardiac motion (Fig. 2, "R" wave), wherein each x-ray cycle commences in a different phase of motion of the body organ (Fig. 4), wherein the x-ray device is on exclusively during low-motion phases of the body organ (col. 7, lines 48-51), by measuring with one of an electrocardiography device and a pulse oxymetry device (Fig. 1, #16).

However, Yoshitome does not disclose wherein the motion signal controls the x-ray device so that projection data sets are acquired from selected x-ray positions nor acquiring a three-dimensional image.

Takagi et al. teaches wherein the motion signal controls the x-ray device so that projection data sets are acquired from selected x-ray positions (col. 5, lines 1-10). Fujita teaches acquiring a three-dimensional image (col. 1, lines 35-39).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have motion signal control of Takagi et al. with the method and device of

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Yoshitome, since one would be motivated to use this motion signal control to reduce distortion as implied from Takagi et al. (col. 2, lines 35-45) and obtain a plurality of different slices faces for more information (col. 5, lines 1-10).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the three-dimensional image of Fujita with the method and device of Yoshitome, since one would be motivated to look at a three-dimensional image to obtain more information from the image compared to a two-dimensional image as implied from Fujita (col. 1, lines 36-39).

4. Claims 6, 8-10, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshitome in view of Fujita and Takagi et al. and as applied to claims 1, 7, and 12 above, and further in view of Van Horn et al. (US Patent 3,871,360).

5. Regarding claims 6, 8, 9, 15, and 17, Yoshitome in view of Fujita and Takagi et al. suggest a method and device as recited above.

However, Yoshitome does not disclose a respiratory motion signal to get projection data sets during the same respiratory motion phases and correct data acquired in different respiratory motion phases with one of an ultrasound device, an abdominal belt for measuring the motion of the diaphragm, and a resistance measuring device for measuring the resistance of the abdominal region of the patient.

Van Horn et al. teaches a respiratory motion signal to get projection data sets during the same respiratory motion phases (col. 1, lines 24-30 and 43-53) and correct data acquired in

different respiratory motion phases (col. 5, lines 48-54) with one of an ultrasound device, an abdominal belt for measuring the motion of the diaphragm, and a resistance measuring device for measuring the resistance of the abdominal region of the patient (col. 2, lines 51-69).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the respiratory adaptations and components to measure these signals of Van Horn et al. with the suggested method and device of Yoshitome in view of Fujita and Takagi et al., since one would be motivated to obtain images or measurements that are not blurred by heart or lung motion as shown by Van Horn et al. (col. 1, lines 24-29).

6. Regarding claims 10 and 16, Yoshitome in view of Fujita, Takagi et al., and Van Horn et al. suggests a method and device as recited above.

However, Yoshitome does not disclose the respiratory motion signal used to inform the patient that a desired respiratory motion phase has been reached.

Fujita further teaches the respiratory motion signal used to inform the patient that a desired respiratory motion phase has been reached (col. 5, lines 52-58, and Fig. 2),

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the respiratory signal for the patient of Fujita with the suggested method and device of Yoshitome in view of Fujita, Takagi et al., and Van Horn et al., since one would be motivated to have better user control for respiration to time data acquisition relative to breathing as shown by Fujita (col. 7, lines 33-67 and col. 8, lines 1-2).

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***Response to Arguments***

7. Applicant's arguments with respect to claims 1-10, and 12-17 have been considered but are moot in view of the new ground(s) of rejection.

***Allowable Subject Matter***

8. The indicated allowability of claim 11 is withdrawn in view of the newly discovered reference(s) to Takagi et al. Rejections based on the newly cited reference(s) are as recited above.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (703) 605-5298. The examiner can normally be reached on M - Th (8 am to 5 pm).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



gk

December 10, 2002



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